# Lock & Dam 13

(Fulton, Illinois)
Mississippi River

**U.S. ARMY CORPS OF ENGINEERS** **BUILDING STRONG®**

**Construction:** 1935-1939
**General Contractors:**
Lock and Dam: McCarthy Improvement Company, Davenport, Iowa

**Congressional District:** IA-1: IL-16

## Description

Lock and Dam 13 is 522.5 miles above the confluence of the Mississippi and Ohio rivers. The complex stretches across the river at a point where the bluffs on the Iowa side are very close to the river; islands and chutes dot the river beneath the bluffs. Eagle Point Nature Center occupies the high bluff immediately above the lock and dam. A dense group of sloughs and islands extend out from the Illinois shore.

Lock dimensions are 110 by 600 feet with additional provisions for an auxiliary lock. The maximum lift is 11 feet with an average lift of 8.6 feet. It takes approximately 10 minutes to fill or empty the lock chamber.

The movable dam consists of 10 submersible Tainter gates, 20-feet high by 64-feet long; and three submersible roller gates, 20-feet high by 100-feet long. The Tainter gates are elliptical. The dam system also includes three non-overflow earth and sand-filled dikes; two transitional dikes; and a submersible earth and sand-filled dike. It takes 10 hours for water to travel from Lock and Dam 12, in Bellevue, Iowa, to Lock and Dam 13.

## History/Significance

Construction of Lock 13 began in July 1935 and was completed in December 1936. Construction on Dam 13 began in January 1937 and was completed in December 1938. The structure was placed in operation on May 13, 1939.

Locks and Dams 13, 14 and 17 were designed and built concurrently. The lock site was inaccessible from the nearest highway which required the contractor to construct a dike road through the Illinois shore's sloughs, islands, and marshy bottom lands. A ferry had to be operated during construction of the dam and central control station. It was also necessary to divert Johnson Creek to enter the river downstream from the site.

During the first several months of the contract, the weather allowed rapid progress on the construction of the dike and diversion ditch. The small amount of precipitation did not greatly interfere with the handling, hauling and placement of material. Short periods of severe weather during the winter months did not seriously handicap the operation. Very moderate rainfall during the summer months provided advantages for concrete operations.

The contractor was given a one-time extension during lock construction. The Mississippi River began rising steadily so that by April 1, 1936, the cofferdam pumps were inadequate to keep the water level low enough to place concrete. On April 4, the contractor permitted the cofferdam to flood. The river stage exceeded flood stage by 0.04 feet during the night of April 6-7. The contractor began dewatering on May 9, but pumping was stopped on May 13 due to a river rise. On May 19, dewatering began again and operations in the cofferdam resumed on June 1, 1936.

While working on the earth dike, the contractor was granted a 25-day time extension on the dam contract due to high water from Sept. 13 through Oct. 7, 1938.

Contract work was completed and accepted 12 days prior to the fixed completion date. The lock and dam elements of the complex were completed at a cost of $7,503,000.

## Annual Tonnage (20-Year Historical)

| Year | Tons | Year | Tons | Year | Tons | Year | Tons |
|---|---|---|---|---|---|---|---|
| 1992 | 24,709,396 | 1997 | 20,480,252 | 2002 | 23,495,472 | 2007 | 18,030,735 |
| 1993 | 14,667,680 | 1998 | 21,866,721 | 2003 | 19,990,636 | 2008 | 13,595,495 |
| 1994 | 17,466,600 | 1999 | 24,803,042 | 2004 | 17,729,645 | 2009 | 15,544,614 |
| 1995 | 21,633,467 | 2000 | 22,746,082 | 2005 | 18,028,251 | 2010 | 15,574,021 |
| 1996 | 22,468,938 | 2001 | 19,277,553 | 2006 | 19,078,754 | 2011 | 14,545,373 |

## Commodity Tonnage & Lockages (2011)

| | |
|---|---|
| Coal | 1,881,384 |
| Petroleum | 273,000 |
| Chemicals | 2,256,551 |
| Crude Materials | 2,242,985 |
| Manufactured Goods | 995,090 |
| Farm Products | 6,864,313 |
| Manufactured Machinery | 13,650 |
| Waste Material | 0 |
| Containers & Pallets | 1,600 |
| Unknown | 16,800 |

| | | |
|---|---|---|
| Subtotals: | Grain | 6,444,571 |
| | Steel | 57,774 |
| Lockages: | Commercial Boats: | 1,391 |
| | Recreation Boats: | 1,261 |
| | Light Boats: | 110 |
| | Other Boats: | 46 |
| | Total Boats: | 2,808 |
| | Total Cuts: | 3,155 |

## The 9-Foot Channel Project

Lock and Dam 13 is one of 29 locks and dams on the Upper Mississippi River that provide a water stairway of travel for commercial and recreational traffic from Minneapolis to the Gulf of Mexico.

The existing 9-foot Channel Navigation Project was largely constructed in the 1930s and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri and Wisconsin.

The maintenance needs of the aging infrastructure are increasing at a rate much greater than the operations and maintenance funding provided for the system which adversely affects reliability of the system. Long-established programs for preventive maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

Additionally, the system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

There are more than 580 manufacturing facilities, terminals, grain elevators, and docks that ship and receive tonnage in the Upper Mississippi River basin. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 1,050 large semi-trucks (26,250 cargo tons, 875,000 bushels, or 17,325,000 gallons). Annually, the 9-foot project generates an estimated $1 billion of transportation cost savings compared with the operation and maintenance costs of approximately $115 million.